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(54) **FUNCTION EXPANDING SYSTEM**

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**G03B 17/56** (2006.01)

**H04N 5/232** (2006.01)

(52) **U.S. Cl.**

CPC ..... **G03B 17/561** (2013.01); **H04N 5/2252** (2013.01); **H04N 5/23203** (2013.01); **H04N 5/23206** (2013.01); **H04N 5/23241** (2013.01)

(58) **Field of Classification Search**

CPC ..... G03B 17/561; G03B 17/563; H04N 5/232

USPC ..... 348/373–375

See application file for complete search history.

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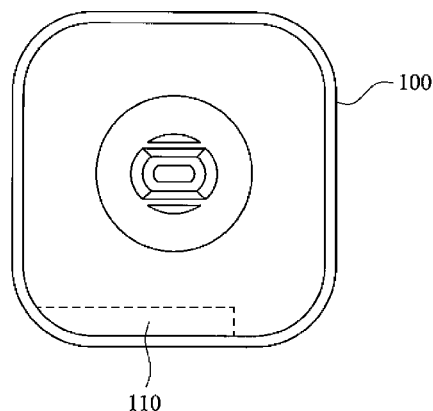
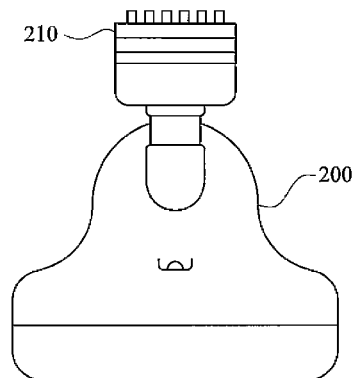
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(57) **ABSTRACT**

A function expanding system is provided and includes an image capturing device and a function expanding stand. The image capturing device includes an image capturing module, a device processing module, and a first connecting interface. The device processing module is electrically connected to the image capturing module, and the first connecting interface is electrically connected to the device processing module. The function expanding stand includes a second connecting interface, a stand processing module and a function expanding module. The second connecting interface is removably connected to the first connecting interface. The device processing module sends a control signal to the stand processing module to execute a function. According to the function expanding system, the image capturing device may be paired with different function expanding stands for expanding functions.

**12 Claims, 4 Drawing Sheets**



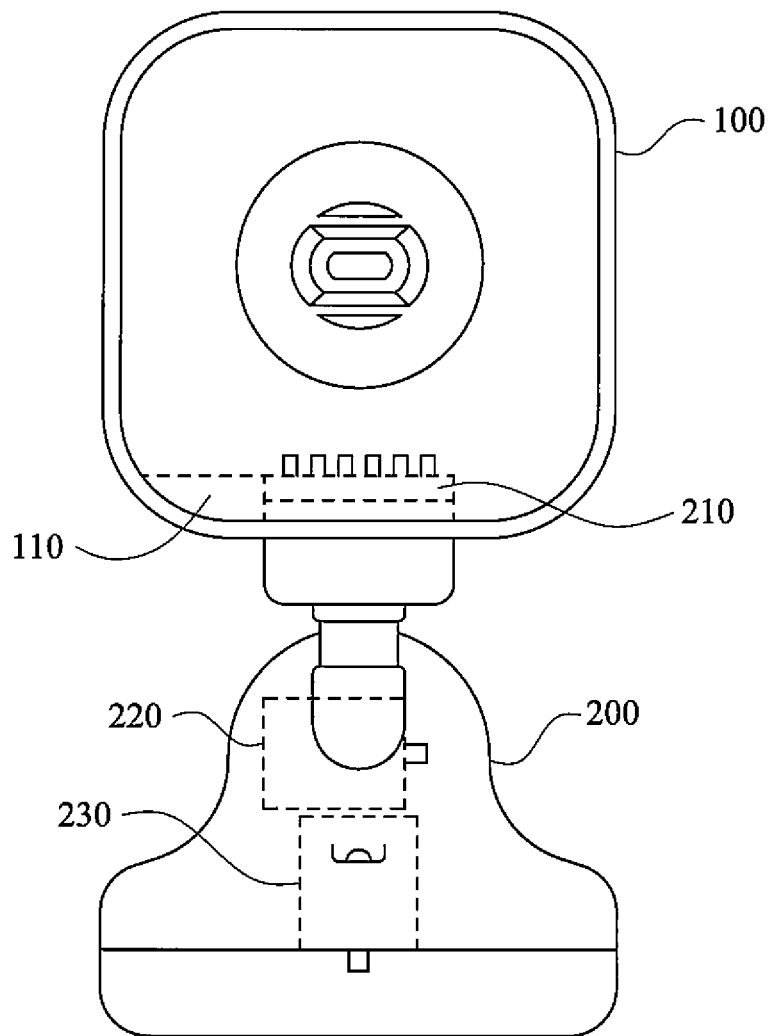


FIG. 1

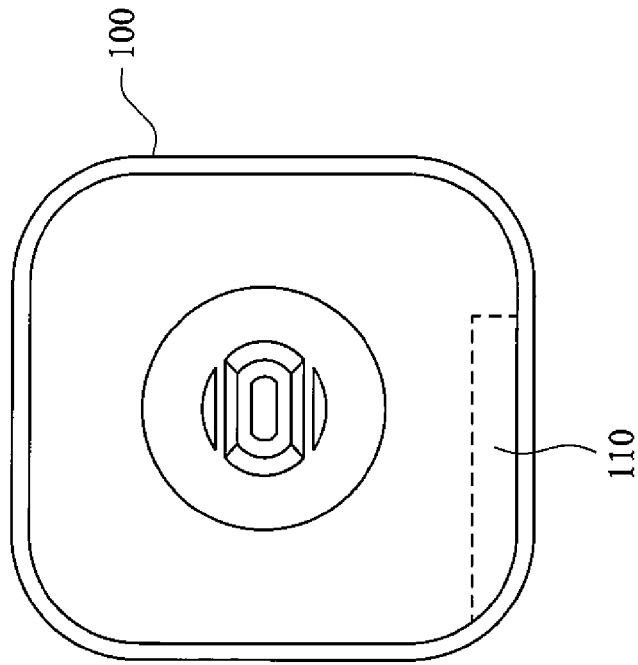
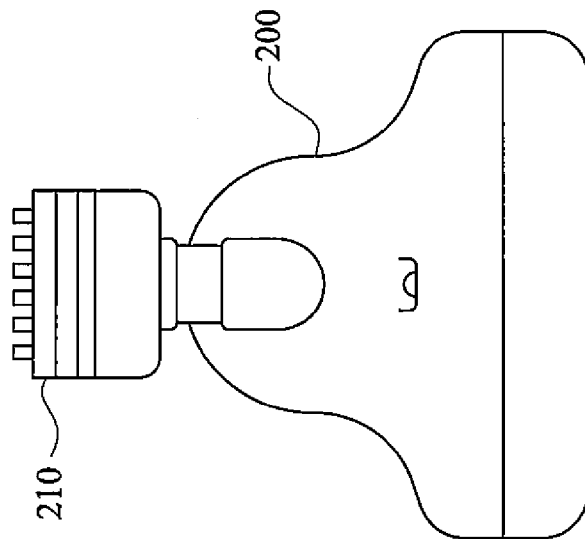


FIG. 2



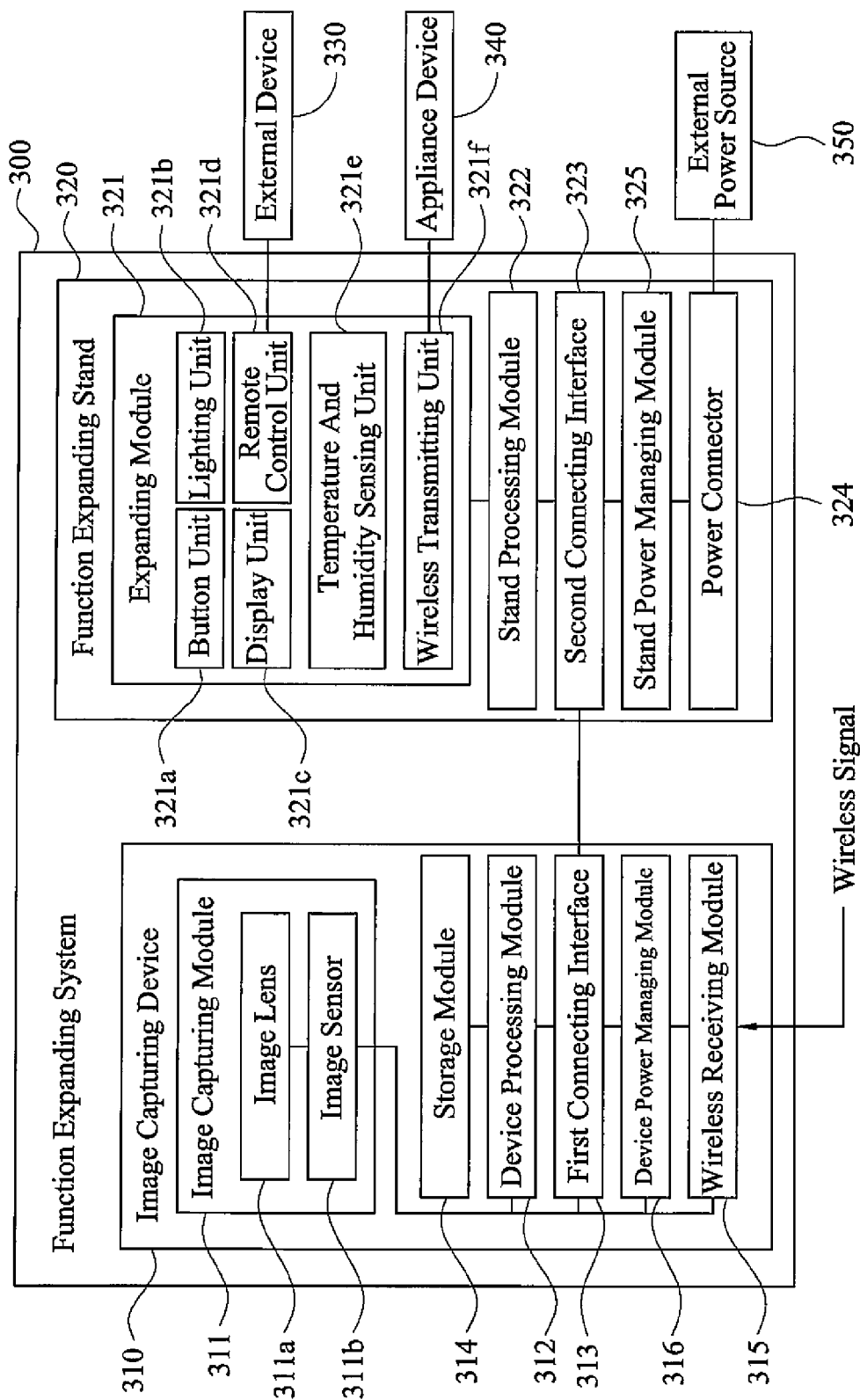


FIG. 3

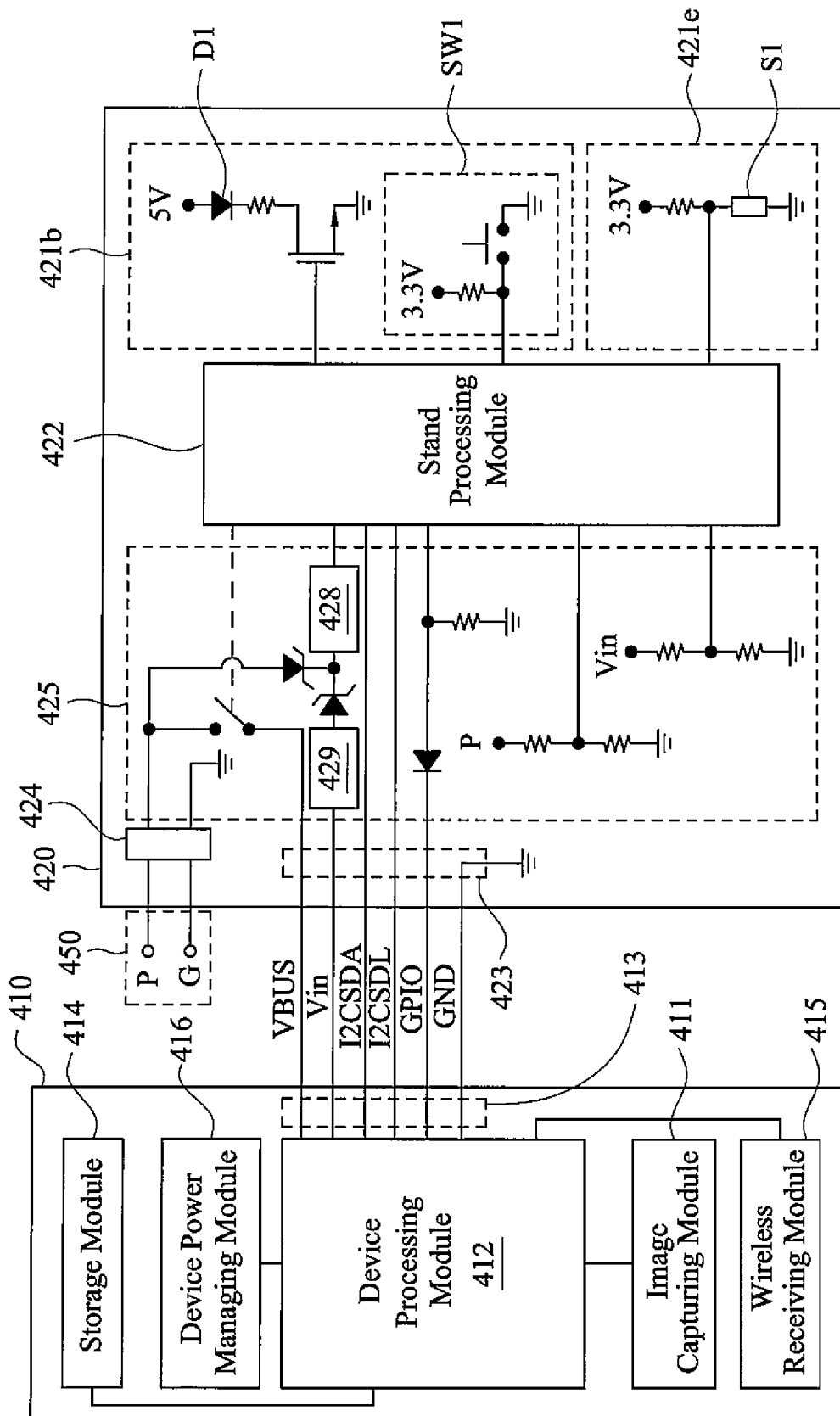


FIG. 4

**FUNCTION EXPANDING SYSTEM****RELATED APPLICATIONS**

This application claims priority to Taiwanese Application  
Serial Number 102147989, filed Dec. 24, 2013, which is  
herein incorporated by reference.

**BACKGROUND****1. Field of Invention**

The present invention relates to an expanding system.  
More particularly, the present invention relates to a function  
expanding system for an image capturing device.

**2. Description of Related Art**

When an image capturing device is sold, functions thereof  
are fixed. If the functions are desired to be expanded, they  
only can be achieved by modifying internal software or firm-  
ware of the image capturing device, but the expansion of  
functions is limited. Therefore, a user needs to buy a new  
device to obtain the functions desired. As a result, it costs the  
user more for expanding the functions.

In a function expanding system of a conventional image  
capturing device, hardware, software or firmware of the  
image capturing device have to be modified, thus increasing  
the cost when expanding the functions. Therefore, how to add  
a stand to the image capturing device for expanding the func-  
tions of the image capturing device through the stand so as to  
reduce the cost is of the important research topics, and is also  
a subject that need to be improved in the related field.

**SUMMARY**

To solve the problem of the conventional skill, one aspect  
of the invention is to provide a function expanding system.

In one embodiment, the function expanding system pro-  
vided in the invention includes an image capturing device and  
a function expanding stand. The image capturing device  
includes an image capturing module, a device processing  
module and a first connecting interface. The image capturing  
module is configured to capture a frame. The device process-  
ing module is electrically connected to the image capturing  
module. The first connecting interface is electrically con-  
nected to the device processing module. The function expand-  
ing stand includes a second connecting interface, a stand  
processing module and a function expanding module. The  
second connecting interface is removably connected to the  
first connecting interface. The stand processing module is  
connected to the second connecting interface. The function  
expanding module is electrically connected to the stand pro-  
cessing module, and is configured to execute at least one  
function. The device processing module transmits a control  
signal to the stand processing module to enable the function  
expanding module to execute the at least one function accord-  
ing to the control signal.

In one embodiment, when the device processing module  
receives a notification signal of the stand processing module,  
the device processing module transmits the control signal to  
the stand processing module according to the notification  
signal or activates the image capturing module to capture the  
frame.

In one embodiment, the function expanding module is one  
or a combination of a button unit, a lighting unit, a display  
unit, a remote control unit, a temperature and humidity sens-  
ing unit, a view angle adjusting unit, and a wireless transmit-  
ting unit.

In one embodiment, when the function expanding module  
is the remote control unit, the remote control unit receives a  
remote control signal from an external device, and the stand  
processing module transmits the notification signal to the  
device processing module according to the remote control  
signal.

In one embodiment, the image capturing module includes  
an image lens and an image sensor. The image sensor is  
configured to capture the frame through the image lens, and  
output image data to the device processing module. The  
device processing module performs an image process on the  
image data.

In one embodiment, the image capturing device further  
includes a storage module. The storage module is electrically  
connected to the device processing module, and configured to  
store the image data that has been processed by the device  
processing module.

In one embodiment, the image capturing device has a fixed  
structure, and the function expanding stand has a connecting  
part. The image capturing device is physically connected to  
the function expanding stand by jointing the connecting part  
with the fixed structure.

In one embodiment, the connecting part is physically con-  
nected to the fixed structure in a horizontal direction.

In one embodiment, the first connecting interface has con-  
tacts, and the second connecting interface has pins. The num-  
ber of the contacts is equal to the number of the pins, and the  
contacts are correspondingly connected to the pins.

In one embodiment, the image capturing device further  
includes a wireless receiving module configured to receive a  
wireless signal through a network. When the function  
expanding module is a wireless transmitting unit, the wireless  
receiving module receives the wireless signal through the  
network, the device processing module transmits the control  
signal to the stand processing module, and the stand process-  
ing module activates the wireless transmitting unit to control  
at least one appliance device.

In one embodiment, the function expanding stand includes  
a power connector and a stand power managing module. The  
power connector is configured to be connected to an external  
power source. The stand power managing module is electri-  
cally connected to the power connector, the stand processing  
module and the second connecting interface. When the power  
connector is connected to the external power source, the stand  
power managing module converts electricity of the external  
power source to provide electricity that the stand processing  
module requires.

In one embodiment, the image capturing device further  
includes a device power managing module electrically con-  
nected to the device processing module. When the power  
connector is connected to the external power source, the  
device processing module obtains power from the stand  
power managing module through the first connecting inter-  
face and the second connecting interface. The device process-  
ing module provides the power to the device power managing  
module. The device power managing module performs a  
power management for the image capturing device.

In one embodiment, the image capturing device is a digital  
camera, a digital video recorder, or a surveillance camera.

As discussed above, technical solutions of the invention  
has obvious advantages and beneficial effects compared with  
the prior art. Significant technical improvements are achieved  
according to the aforementioned technical solutions which  
have widespread utility value in the industry. The advantages  
are adding a stand for the image capturing device, expanding

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the functions of the image capturing device through the stand, reducing cost, and improving a flexibility of expanding the functions.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The invention can be more fully understood by reading the following detailed description of the embodiment, with reference made to the accompanying drawings as follows:

FIG. 1 is a schematic diagram illustrating a connection of a function expanding system according to an embodiment of the invention;

FIG. 2 is a schematic diagram illustrating disassembly of the function expanding system according to an embodiment of the invention;

FIG. 3 is a block diagram illustrating the function expanding system according to an embodiment of the invention; and

FIG. 4 is schematic circuit diagram illustrating the function expanding system according to an embodiment of the invention.

#### DETAILED DESCRIPTION

Specific embodiments of the present invention are described in detail below in order to make the disclosure more complete and detailed. After understanding the embodiments of the invention, people skilled in the art may change and modify the technology taught by the invention without departing from the spirit and the range of the invention. On the other hand, known components and steps are not described in detail in the embodiments to avoid unnecessary limitation of the invention.

FIG. 1 is a schematic diagram illustrating a connection of a function expanding system according to an embodiment of the invention. In one embodiment, as shown in FIG. 1, the function expanding system includes an image capturing device 100 and a function expanding stand 200. The image capturing device 100 is a device capable of operating independently to capture a frame and store it as an image. After the image capturing device 100 obtains enough power to be activated from an external power source in a charging manner, a user may carry on the image capturing device 100 to capture the frame, and store the frame as an image file. Since the image capturing device 100 has fixed functions, if the image capturing device 100 needs to be expanded to execute other functions, the image capturing device 100 and the function expanding stand 200 can be combined. In addition to being a fixed station of the image capturing device 100, the function expanding stand 200 may also diversify the functions of the image capturing device 100 through a connection. In one embodiment, the image capturing device 100 is a device such as a digital camera, a digital video recorder, or a surveillance camera, which is capable of capturing frames and generating image data. The image data can be stored as an image file or be post-processed. When the image capturing device 100 is jointed with the function expanding stand 200, a capturing angle of the image capturing device 100 can be adjusted through a view angle adjusting unit disposed in the function expanding stand 200. The view angle adjusting unit can be implemented as a tilting motor, a panning motor or a combination thereof based on using requirements. In the present embodiment, the view angle adjusting unit includes a tilting motor 220 and a panning motor 230 to control a view angle of the image capturing device 100 for capturing the frame.

FIG. 2 is a schematic diagram illustrating disassembly of the function expanding system according to an embodiment of the invention. As shown in FIG. 1 and FIG. 2, the image

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capturing device 100 is removably connected to the function expanding stand 200. In one embodiment, the image capturing device 100 has a fixed structure 110, and the function expanding stand 200 has a connecting part 210. The image capturing device 100 is physically connected to the function expanding stand 200 by jointing the connecting part 210 with the fixed structure 110. For example, the fixed structure 110 can be a sliding groove, and the connecting part 210 can be a connector. The user may connect/detach the image capturing device 100 with/from the function expanding stand 200 through the sliding groove in a horizontal direction based on different using purposes (e.g., carrying on the image capturing device 100, fixing the image capturing device 100 on the function expanding stand 200, etc.)

FIG. 3 is a block diagram illustrating the function expanding system according to an embodiment of the invention. As shown in FIG. 3, an image capturing device 310 includes an image capturing module 311, a device processing module 312 and a first connecting interface 313. The device processing module 312 is electrically connected to the image capturing module 311. The first connecting interface 313 is electrically connected to the device processing module 312. The function expanding stand 320 includes a second connecting interface 323, a stand processing module 322 and a function expanding module 321. The first connecting interface 313 is removably connected to the second connecting interface 323. The stand processing module 322 is electrically connected to the device processing module 312 through the first connecting interface 313 and the second connecting interface 323. The function expanding module 321 is electrically connected to the stand processing module 322.

In one embodiment, the first connecting interface 313 has contacts, and the second connecting interface 323 has pins. The number of the contacts is equal to the number of the pins, and the contacts are correspondingly connected to the pins. For example, the second connecting interface 323 includes pogo pins, and the first connecting interface 313 is configured to be connected to the pogo pins in a touching way to achieve transmitting of power and signals between the image capturing device 100 and the function expanding stand 200. The pogo pins are used as pins of the second connecting interface 323. If the second connecting interface 323 has 6 pins, then the first connecting interface 313 has 6 contacts corresponding to the 6 pins.

When the image capturing device 100 is physically connected to the function expanding stand 200, the signals and the power can be transmitted between the image capturing device 100 and the function expanding stand 200 through the pogo pins. When the function expanding stand 200 is connected to a power supply, the image capturing device 100 can even obtain required power from the function expanding stand 200 through the pogo pins so as to operate normally.

For example, the device processing module 312 may be a digital signal processor (DSP) or another processor. The stand processing module 322 may be a micro processor, a control chip, or a similar component.

During operation, in the image capturing device 310, the image capturing module 311 is configured to capture a frame. The device processing module 312 is configured to process image data generated after the image capturing module 311 captures the frame. In particular, when the first connecting interface 313 is connected to the second connecting interface 323, a notification signal and a control signal can be transmitted between the device processing module 312 and the stand processing module 322, such that the function expanding stand 320 can expand functions other than the image capturing device 310. The function expanding module 321 is

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configured to execute the functions not owned by the image capturing device **310** (e.g., adding a button, receiving a remote control signal, providing a night light, or a liquid crystal display panel), or enable the stand processing module **322** to transmit the notification signal to the device processing module **312** to activate the image capturing module **311** to capture the frame after the function expanding module **321** receives the remote control signal from an external device.

In one embodiment, when the device processing module **312** receives the notification signal of the stand processing module **322**, the device processing module **312** activates the image capturing module **310** according to the notification signal to capture the frame and generate the image data. For example, the function expanding stand **320** has a button, and when the button is pressed, the stand processing module **322** transmits the notification signal to the device processing module **312**. After receiving the notification signal, the device processing module **312** activates the image capturing module **311** to capture the frame and generate the image data.

In another embodiment, when the device processing module **312** receives the notification signal of the stand processing module **322**, the device processing module **312** transmits the control signal to the stand processing module **322** to enable the function expanding module **321** to execute a function according to the control signal. For example, the function expanding stand **320** can receive a remote control signal from a mobile device to enable the image capturing device **310** to activate a function provided by the function expanding stand **320** for turning on/off appliance devices. When the function expanding stand **320** receives the remote control signal from the mobile device, the stand processing module **322** transmits the notification signal to the device processing module **312**. After receiving the notification signal, the device processing module **312** transmits the control signal to the stand processing module **322** to activate the function provided by the function expanding stand **320** for turning on/off the appliance devices.

In one embodiment, the image capturing module **311** includes an image lens **311a** and an image sensor **311b**. The image lens **311a** is generally a lens set constituted by one or more pieces of optical glass, in which a basic unit is a concave lens, a multi-surface lens, or a combination thereof. The image sensor **311b** is configured to capture the frame through the image lens **311a**, and is a component for converting the frame into image data. The image sensor **311b** can be charge-coupled device (CCD) or a complementary metal-oxide-semiconductor (CMOS) active pixel sensor. The image sensor **311b** outputs the image data to the device processing module **312**, and enables the device processing module **312** to process the image data.

In one embodiment, the image capturing device **310** further includes a storage module **314**. The storage module **314** is electrically connected to the device processing module **312**, and is configured to store the image data that has been processed by the device processing module **312**. In one implementation, the storage module **314** may be a dynamic random access memory, or a memory block divided from a memory card. After processing the image data generated after the image capturing module **311** captures the frame, the device processing module **312** outputs an image data file to the storage module **314**, and the storage module **314** stores the image data file outputted from the device processing module **312**.

In one embodiment, the function expanding module **321** is one or a combination of a button unit **321a**, a lighting unit **321b**, a display unit **321c**, a remote control unit **321d**, a temperature and humidity sensing unit **321e**, a view angle

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adjusting unit, and a wireless transmitting unit **321f**. The button unit **321a** is at least one button added on the function expanding stand **320** as described above. The user may activate the function expanding stand **320** through the button, so as to transmit the notification signal to the stand processing module **322**. The lighting unit **321b** may be a light-emitting diodes configured to add a lighting function into the function expanding stand **320**. For example, when the image capturing device **310** is used as a baby monitor, the lighting unit **321b** can be used as a night light to assist the image capturing device **310** in capturing the frame. The display unit **321c** can be a liquid crystal display (LCD) panel configured to add a display function (e.g., displaying the function being executed by the image capturing device **310**, a memory usage status of the image capturing device **310**, etc.) into the function expanding stand **320**. The temperature and humidity sensing unit **321e** can be a temperature sensor, such as a thermally sensitive resistance (TSR) or a temperature sensing chip, for solely sensing a room temperature. The temperature and humidity sensing unit **321e** can also be a humidity sensor, such as a capacitance type humidity sensor, for solely sensing humidity. The temperature and humidity sensing unit **321e** can also be an integrated circuit formed by combining the temperature sensor with the humidity sensor. The view angle adjusting unit can be the tilting motor **220** (shown in FIG. 1), the panning motor **230** (shown in FIG. 1), or a combination thereof to control a view angle of the image capturing device **310** for capturing the frame.

The remote control unit **321d** can be a receiver (e.g., a bluetooth signal receiver or an infrared signal receiver) to receive a bluetooth signal or an infrared signal from the mobile device or other devices. The wireless transmitting unit **321f** can be a wireless communication module complying with a Zigbee or Z-wave protocol to execute an appliance automation control. For example, a signal is sent by the wireless transmitting unit **321f** to remotely control the switching of an appliance device (e.g., an air condition, a fan, or a lamp).

In one embodiment, when the function expanding module **321** is the remote control unit **321d**, the remote control unit **321d** receives the remote control signal sent from the external device **330**, and the stand processing module **322** transmits the notification signal to the device processing module **312** according to the remote control signal sent from the external device **330**. For example, when the remote control unit **321d** in the function expanding stand **320** receives the remote control signal (e.g., for activating the image capturing module **310** to capture the frame) from the mobile device, the stand processing module **322** transmits the notification signal to the device processing module **312** according to the remote control signal sent from the mobile device. After receiving the notification signal, the device processing module **312** activates the image capturing module **310** to capture the frame.

In one embodiment, the image capturing device **310** further includes the wireless receiving module **315** configured to receive a wireless signal through a network. When the function expanding module **321** is the wireless transmitting unit **321f**, the wireless receiving module **315** receives the wireless signal through the network. The device processing module **312** transmits the control signal to the stand processing module **322**, and the stand processing module **322** activates the wireless transmitting unit **321f** to control at least one appliance device **340** (e.g., an air condition, a fan, or a lamp). When the wireless receiving module **315** of the image capturing device **310** receives the wireless signal through the network, the user can transmit the wireless signal to the image capturing device **310** from a remote computer device or the mobile device through the network. For example, the user

wants to turn on an air condition at home through the network, and he/she can notify the image capturing device **310** having the wireless receiving module **315** through the remote computer device or the mobile device. Then, the device processing module **312** in the image capturing device **310** transmits the control signal to the stand processing module **322**, and the stand processing module **322** turns on the air condition through the wireless transmitting unit **321f**.

In one embodiment, the image capturing device **310** includes the wireless receiving module **315**, and the function expanding module **321** is the view angle adjusting unit. When the wireless receiving module **315** of the image capturing device **310** receives the wireless signal through the network, the user can transmit the wireless signal to the image capturing device **310** from the remote computer device or the mobile device through network to drive the view angle adjusting unit to adjust a capturing angle of the image capturing device **310**.

In one embodiment when the function expanding module **321** is a combination of the remote control unit **321d** and the wireless transmitting unit **321f**, the user can also transmit the remote control signal to the remote control unit **321d** through the mobile device, and transmit the notification signal to the device processing module **312** through the stand processing module **322**. Then, the device processing module **312** transmits the control signal to the stand processing module **322** to enable the wireless transmitting unit **321f** to control the switching of an appliance device (e.g., an air conditioner, a fan or a lamp).

In one embodiment, the function expanding stand **320** further includes a power connector **324** and a stand power managing module **325**. The power connector **324** can be a connector configured to be connected to a power terminal (e.g., 5 volts) and a ground terminal of an external power source **350**. The stand power managing module **325** is electrically connected to the power connector **324**, the stand processing module **322** and the second connecting interface **323**. When the power connector **324** is connected to the external power source **350**, the stand power managing module **325** receives and converts electricity of the external power source **350** to the electricity required by the stand processing module **322**, such as the electricity required by the stand processing module **322** itself in operation, and the electricity provided by the stand processing module **322** to the function expanding module **321** for operation.

In one embodiment, the image capturing device **310** further includes a device power managing module **316** which is electrically connected to the device processing module **312**. When the power connector **324** is connected to the external power source **350**, the device power managing module **316** obtains power from the stand power managing module **325** through the first connecting interface **313** and the second connecting interface **323** and provides the power to the device power managing module **316**. The device power managing module **316** performs a power management for the image capturing device **310**. For example, the device power managing module **316** provides activation electricity of the image capturing device **310**. Even if the electricity currently owned by the image capturing device **310** cannot activate the image capturing module **311** to capture the frame, the device power managing module **316** can obtain sufficient electricity from the stand power managing module **325** to activate the image capturing device **310**, once the image capturing device **310** is connected to the function expanding stand **320** and the power connector **324** is connected to the external power source **350**. Then, the image capturing device **310** can execute its function, or control the function expanding module **320** to execute the function of the function expanding module **321**.

FIG. **4** is schematic circuit diagram illustrating the function expanding system according to an embodiment of the invention. As shown in FIG. **4**, an image capturing device **410** includes an image capturing module **411**, a device processing module **412**, a first connecting interface **413**, a storage module **414**, a wireless receiving module **415** and a device power managing module **416**. A function expanding stand **420** includes a stand processing module **422**, a second connecting interface **423**, a power connector **424**, and a stand power managing module **425**. Since expanded functions of the function expanding stand **420** in FIG. **4** include night lighting and temperature and humidity sensing, the function expanding module further includes a lighting unit **421b** and a temperature and humidity sensing unit **421e**. A light-emitting diodes **D1** in the lighting unit **421b** is used as a light source. The light-emitting diodes **D1** is switched on/off through a lighting unit switch **SW1**. A collaboration of software, hardware and firmware can be adopted for implementing the lighting unit switch **SW1**. The temperature and humidity sensing unit **421e** includes a temperature and humidity sensor **S1**, in which the collaboration of software, hardware and firmware can also be adopted to sense temperature and humidity.

The connection between the first connecting interface **413** and the second connecting interface **423** can be implemented through the pogo pins. The second connecting interface **423** has 6 pins, which are a voltage bus **VBUS**, a connection determination pin **Vin**, a data bus **I2CSDA**, a data bus **I2CSDL**, an interrupt bus **GPIO** and a ground pin **GND**. The first connecting interface **413** includes 6 corresponding contacts. When the first connecting interface **413** is connected to the second connecting interface **423**, the notification signal and the control signal can be transmitted between the device processing module **412** and the stand processing module **422** through the data bus **I2CSDA**, the data bus **I2CSDL** and the interrupt bus **GPIO**. The stand processing module **422** can transmit power to the device processing module **412** through the voltage bus **VBUS**. The stand processing module **422** can detect a voltage transmitted from the device processing module **412** to the second connecting interface **423** through the connection determination pin **Vin**. In addition, a level of the voltage transmitted from the device processing module **412** to the second connecting interface **423** is adjusted by a dc-to-dc converter **429** in the stand power managing module **425**.

When the function expanding stand **420** is connected to a power terminal **P** (e.g., 5 volts) and a ground terminal **G** of the external power source **450** through the power connector **424**, on the one hand, the stand power managing module **425** converts, by a low dropout regulators **428**, the received electricity from 5 volts to 3.3 volts that the stand processing module **422** requires. The electricity of 3.3 volts includes electricity required by the stand processing module **422**, and electricity required by the lighting unit **421b**, the lighting unit switch **SW1** and the temperature and humidity sensing unit **421e**; on the other hand, the stand power managing module **425** provides 5 volts to the device power managing module **416** through the voltage bus **VBUS** to activate the image capturing device **410** with insufficient electricity supplied to the image capturing device **410**.

The data buses **I2CSDA** and **I2CSDL** are configured to transmit the notification signal and the control signal between the device processing module **412** and the stand processing module **422**. The data buses **I2CSDA** and **I2CSDL** can be series communication ports (e.g., **I2C** or **SPI**). The interrupt bus **GPIO** is responsible for sending an interrupt signal to the device processing module **412**. When the device processing module **412** receives the interrupt signal, the device process-

ing module **412** receives the notification signal sent from the stand processing module **422** through the data buses I2CSDA and I2CSDL.

Although the present invention has been described in considerable detail with reference to certain embodiments thereof, other embodiments are possible. Therefore, the spirit and scope of the appended claims should not be limited to the description of the embodiments contained herein. It will be apparent to those skilled in the art that various modifications and variations can be made to the structure of the present invention without departing from the scope or spirit of the invention. In view of the foregoing, it is intended that the present invention cover modifications and variations of this invention provided they fall within the scope of the following claims.

What is claimed is:

**1.** A function expanding system, comprising:  
an image capturing device, comprising:  
an image capturing module configured to capture a frame;  
a device processing module electrically connected to the image capturing module;  
a first connecting interface electrically connected to the device processing module; and  
a function expanding stand comprising:  
a second connecting interface removably connected to the first connecting interface;  
a stand processing module connected to the second connecting interface; and  
a function expanding module which is electrically connected to the stand processing module, and configured to execute at least one function;  
wherein the device processing module transmits a control signal to the stand processing module to enable the function expanding module to execute the at least one function according to the control signal,  
wherein the image capturing device has a fixed structure, the function expanding stand has a connecting part, the fixed structure is a sliding groove, and a plurality of contacts are disposed on the sliding groove, and  
wherein the image capturing device is physically connected to the function expanding stand by jointing the connecting part with the fixed structure, and the connecting part is physically connected to the fixed structure in a horizontal direction.

**2.** The function expanding system of claim **1**, wherein when the device processing module receives a notification signal of the stand processing module, the device processing module transmits the control signal to the stand processing module according to the notification signal or activates the image capturing module to capture the image.

**3.** The function expanding system of claim **2**, wherein the function expanding module comprises one or a combination of a button unit, a lighting unit, a display unit, a remote control unit, a temperature and humidity sensing unit, a view angle adjusting unit, and a wireless transmitting unit.

**4.** The function expanding system of claim **3**, wherein the function expanding module comprises the remote control unit, the remote control unit receives a remote control signal from an external device, and the stand processing module transmits the notification signal to the device processing module according to the remote control signal.

**5.** The function expanding system of claim **1**, wherein the image capturing device further comprises:

a wireless receiving module configured to receive a wireless signal through a network,

wherein the function expanding module comprises a wireless transmitting unit, the wireless receiving module receives the wireless signal through the network, the device processing module transmits the control signal to the stand processing module, and the stand processing module activates the wireless transmitting unit to control at least one appliance device.

**6.** The function expanding system of claim **1**, wherein the image capturing device further comprises:

a wireless receiving module, configured to receive a wireless signal through a network,

wherein the function expanding module comprises a view angle adjusting unit, the wireless receiving module receives the wireless signal through the network, the device processing module transmits the control signal to the stand processing module, and the stand processing module drives the view angle adjusting unit to adjust a capture view angle of the image capturing device.

**7.** The function expanding system of claim **1**, wherein the image capturing module comprises:  
an image lens; and

an image sensor configured to capture the frame through the image lens and to output image data to the device processing module to enable the device processing module to process the image data.

**8.** The function expanding system of claim **7**, wherein the image capturing device further comprises:

a storage module, which is electrically connected to the device processing module, and is configured to store the image data that has been processed by the device processing module.

**9.** The function expanding system of claim **1**, wherein the first connecting interface comprises the contacts, the second connecting interface comprises a plurality of pins, the number of the contacts is equal to the number of the pins, and the contacts are connected to the pins correspondingly.

**10.** The function expanding system of claim **1**, wherein the function expanding stand further comprises:

a power connector configured to be connected to an external power source; and

a stand power managing module electrically connected to the power connector, the stand processing module and the second connecting interface,

wherein when the power connector is connected to the external power source, the stand power managing module converts electricity of the external power source to provide electricity that the stand processing module requires.

**11.** The function expanding system of claim **10**, wherein the image capturing device further comprises:

a device power managing module electrically connected to the device processing module,

wherein when the power connector is connected to the external power source, the device processing module obtains power from the stand power managing module through the first connecting interface and the second connecting interface, the device processing module provides the power to the device power managing module, and the device power managing module performs a power management for the image capturing device.

**12.** The function expanding system of claim **1**, wherein the image capturing device is a digital camera, a digital video recorder, or a surveillance camera.